

CLAIMS

What is claimed is:

1. An isolated polypeptide having glucosamine-6-sulfatase activity.
2. The polypeptide according to claim 1, wherein said sulfatase is a human sulfatase.
3. The polypeptide according to claim 1, wherein said sulfatase comprises an amino acid sequence set forth in any one of SEQ ID NO: 03, 06, 09, 12, 15, and 18.
4. An isolated polynucleotide comprising a nucleotide sequence encoding a sulfatase having glucosamine-6-sulfatase activity.
5. The polynucleotide according to claim 4, wherein said polynucleotide comprises a nucleotide sequence that encodes a polypeptide comprising an amino acid sequence set forth in any one of SEQ ID NO: 03, 06, 09, 12, 15, and 18.
6. An expression cassette comprising a transcriptional initiation region functional in an expression host, a nucleic acid having a nucleotide sequence according to claim 4 under the transcriptional regulation of said transcriptional initiation region, and a transcriptional termination region functional in said expression host.
7. A cell comprising an expression cassette according to claim 6 as part of an extrachromosomal element or integrated into the genome of a host cell as a result of introduction of said expression cassette into said host cell, or the cellular progeny thereof.
8. A method of producing a sulfatase, said method comprising:
growing a cell according to claim 7, whereby said sulfatase is produced by said cell; and
isolating said sulfatase substantially free of other proteins.

9. A monoclonal antibody binding specifically to a sulfatase.
10. A method of identifying an agent that inhibits an enzymatic activity of a sulfatase, the method comprising:
- a) contacting a sulfatase according to claim 1 with a test agent and a substrate for the sulfatase; and
 - b) determining the effect, if any, on glucosamine-6-sulfatase activity of the sulfatase.
11. The method according to claim 10, wherein the substrate is 4-methylumbelliferyl sulfate, and said determining is by measuring the amount of 4-methylumbelliferone reaction product produced.
12. A method of reducing tumor-induced angiogenesis in an individual having a tumor, the method comprising:
- administering to the individual an effective amount of an agent that inhibits enzymatic activity of a sulfatase that releases an angiogenic factor from its association with extracellular matrix, thereby reducing angiogenesis.
13. The method according to claim 12, wherein said reduction in angiogenesis results in a reduction in tumor growth.
14. The method according to claim 12, wherein said administering is at or near the site of the tumor.
15. A method of treating an ischemic condition in an individual, the method comprising administering an effective amount of a sulfatase polypeptide according to claim 1 to the individual, wherein the sulfatase polypeptide increases angiogenesis, thereby treating the ischemic condition.
16. A method of detecting the presence of a cancerous cell in a tissue, the method comprising:

determining the level of an mRNA in a host tissue sample comprising a sequence that encodes a sulfatase according to claim 1; and

comparing the level of said mRNA in said host tissue sample to a control value, wherein an elevated level of sulfatase mRNA in a cell in the tissue sample, compared to a control, indicates the presence of a cancerous cell in the tissue.

17. The method of claim 16, wherein said determining is by amplifying a cDNA copy of the mRNA using specific primer oligonucleotides and a DNA polymerase.

18. A method of reducing tumor growth in an individual having a tumor, the method comprising:

administering to the individual an effective amount of an agent that inhibits enzymatic activity of a sulfatase according to claim 1, wherein said sulfatase releases a growth factor from extracellular matrix, and wherein inhibition of enzymatic activity of said sulfatase reduces tumor growth.

19. The method of claim 18, wherein said administering is at or near the site of the tumor.

20. A method of detecting the presence of a cancerous cell in an individual, the method comprising:

determining the level of a sulfatase polypeptide according to claim 1 in a biological sample from said individual; and

comparing the level of said polypeptide in said sample to a control value, wherein an elevated level of said sulfatase in the biological sample, compared to a control, indicates the presence of a cancerous cell in said individual.

21. The method according to claim 20, wherein said determining is by contacting said sample with an antibody specific for said sulfatase polypeptide.

22. The method according to claim 20, wherein said determining is by contacting said sample with a substrate for said sulfatase, such that a detectable product is produced in the presence of said sulfatase.